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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,079	02/20/2004	Fred Grunert	GK-OEH-179/500814.20081	6268

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EXAMINER	
KO, TONY	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,079	GRUNERT ET AL.	
	Examiner	Art Unit	
	Tony Ko	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/20/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show three different alternating layer systems as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 14 is objected to because of the following informalities: there are two "the" in the last sentence of the claim. Appropriate correction is required.

DETAILED ACTION

Claim Rejections - 35 USC § 112

3. Claims 13-16 recite the limitation "adapted interference". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Vincent (U.S. Patent 5,272,518).

3. Regarding claims 1, 2, and 6, Vincent discloses a photo sensor for color measurement based on three spectral components comprising: an interference filter structure (17); a sensor chip having at least three partial surfaces (19) of different

sensitivities for detecting the three spectral components through said interference filter (Col. 6, Lines 45-53); structure which precedes said sensor chip partial surfaces; said interference filter structure containing three different alternating layer systems of silicon dioxides and titanium dioxide for selective transmission of incident light into the different partial surfaces of the sensor chip (Col. 20 Line 59 – Col. 21 lines 1-33); said partial surfaces providing measurement values in response to said selectively transmitted incident light (Col. 8, Lines 45-55); said three partial surfaces covered by different interference filters of said filter structure being adapted to the spectral characteristic of the human eye; said partial surfaces being arranged so as to be distributed in a sector-shaped manner around a central point with passive webs located therebetween; and each interference filter having a transmission characteristic over the wavelength of the light to be measured spectrally being adapted to the response of the human eye in such a way that the product of the base sensitivity of the photosensor and the transmission of the interference filter is proportional to the normal spectral value curve of the human eye for the relevant coordinate of the color space, so that the passed spectral components generate measurement values in the partial surfaces, which measurement values can be converted into spectral color values with simple scaling relative to one another in the color space. Vincent also discloses the transmission characteristic for each partial surface of the sensor chip having different sensitivities with different layer thicknesses of TiO2 and SiO2. Since the 2% tolerance adds no structural difference, Vincent inherently discloses the limitation in claim 2. Vincent also discloses the interference

filters are arranged directly on semiconductor diodes of the sensor chip (col. 29, Lines 61-65).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent in view of Delignieres (U.S. Patent 5,680,220).

6. Regarding claim 3, Vincent discloses the invention set forth above. Vincent does not disclose a linear correction method. Delignieres discloses (Col. 5, Lines 1-10) a linear correction method. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use linear correction method to correct the incorrect values.

7. Regarding claims 3-5, Vincent in view of Delignieres discloses the invention set forth above. Claims 4 and 5 show no criticality (claim 4 shows non local and claim 5 shows local matrixing is the proof of the lack of criticality). It would have been obvious to a person of ordinary skill in the art at the time of the invention to use local or non-local matrixing to properly implement linear correction.

8. Claims 7-9 and 12, 13 and 15, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent.

9. Regarding claim 7, Vincent discloses the invention set forth above; Vincent does not disclose the semiconductor diodes are made of silicon. It is well known to make semiconductor diodes with Si. It would have been obvious to a person of ordinary skill in the art at the time of the invention to make semiconductor diodes with Si to reduce the production cost.

10. Regarding claim 12, Vincent discloses the invention set forth above; Vincent does not disclose the filters are arranged over the semiconductor diodes of the sensor chip on a separate glass plate. It is design choice to place the filters over the semiconductor diodes of the sensor chip on a separate glass plate. It would have been obvious to a person of ordinary skill in the art at the time of the invention to place the filters over the semiconductor diodes of the sensor chip on a separate glass plate to secure the location of the filter.

11. Regarding claims 13 and 15, Vincent discloses the invention set forth above; Vincent does not disclose altering the shape of the filters. It is design choice to alter the filter shape to a third of a circle or rhombuses with a 120-degree angle. It would have been obvious to a person of ordinary skill in the art at the time of the invention to change the shape of the filter to enable to the detector to receive desired light wavelength and intensity.

12. Regarding claims 8 and 9, Vincent discloses the invention in claim 8 and 9 since claims 8 and 9 does not add no structural differences between claimed invention in 7.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent in view of Auth (U.S. Patent Re. 32,821).

14. Regarding claim 10, Vincent discloses the invention set forth above, Vincent does not disclose the use of a germanium diode. Auth discloses (Fig. 16) the use of a germanium diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use germanium diode to drop off the unwanted spectrum contents.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent in view of Turner (U.S. Patent 6,707,556).

16. Regarding claim 11, Vincent discloses the invention set forth above, Vincent does not disclose InGaAs diode. Turner discloses the use of InGaAs diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use to reduce dark current.

17. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jie (U.S. Patent 6,133,954) in view of Hanrahan (U.S. Patent 5,246,803).

18. Regarding claim 1-3 and 6, Jie discloses (Fig. 4H) a photo sensor (42) for color measurement based on three spectral components comprising: an interference filter structure; a sensor chip having at least three partial surfaces of different sensitivities for detecting the three spectral components through said interference filter structure which precedes said sensor chip partial surfaces; said interference filter structure containing three different alternating layer systems for selective transmission of incident light into the different partial surfaces of the sensor chip; said partial surfaces providing measurement values in response to said selectively transmitted incident light; said three partial surfaces (the surface of 42 A, B, C, D) covered by different interference

filters (48", 49", and 50") of said filter structure being adapted to the spectral characteristic of the human eye; said partial surfaces being arranged so as to be distributed in a sector-shaped manner around a central point with passive webs located therebetween; and each interference filter having a transmission characteristic over the wavelength of the light to be measured spectrally being adapted to the response of the human eye in such a way that the product of the base sensitivity of the photo sensor and the transmission of the interference filter is proportional to the normal spectral value curve of the human eye for the relevant coordinate of the color space, so that the passed spectral components generate measurement values in the partial surfaces, which measurement values can be converted into spectral color values with simple scaling relative to one another in the color space. Jie also discloses the interference filters are arranged directly on semiconductor diodes of the sensor chip. Jie also discloses (5C) the partial surfaces on the sensor chip which are covered with adapted interference filters and have different sensitivity (R, B and G colors) are arranged around a central point as sectors of a circle area with different surface contents, wherein the different surface contents are adapted in such a way that a lower base sensitivity of one partial surface which comes about because of limited wavelength transmission of the respective interference filter is compensated by a correspondingly greater surface content of the partial surface of the photosensor. Jie also discloses the sensor chip to be uniformly distributed around a plurality of central points with identical webs, so that the tricolor segments are arranged in a honeycombed manner (Fig. 6), wherein partial surfaces having identical spectral response do not share any adjacent lateral edges.

Jie does not disclose the use of silicon dioxide and titanium dioxide as the layer content. Hanrahan discloses (Col. 3, Lines 66-67) the use of silicon dioxide and titanium dioxide layers. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use silicon dioxide and titanium dioxide layers to precisely filter out the unwanted light.

19. Regarding claim 2, Jie in view of Hanrahan discloses the invention set forth above. Since the 2% tolerance of the layer thicknesses has no structural difference from the invention set forth above, claim 2 is rejected.

20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jie in view of Hanrahan further in view of Delignieres.

21. Jie in view of Hanrahan discloses the invention set forth above, Jie in view of Hanrahan does not disclose the use of linear correction. Delignieres discloses the use of linear correction. . It would have been obvious to a person of ordinary skill in the art at the time of the invention to use linear correction method to correct the incorrect values.

22. Regarding claims 4-5, Jie in view of Hanrahan further in view of Delignieres discloses the invention set forth above. Since claims 4 and 5 shows no criticality (claim 4 shows non local and claim 5 shows local matrixing is the proof of the lack of criticality), claims 4 and 5 are rejected.

23. Claims 7-9 and 12, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jie in view of Hanrahan.

24. Regarding claim 7, Jie in view of Hanrahan discloses the invention set forth above; Jie in view of Hanrahan does not disclose the semiconductor diodes are made of silicon. It is well known to make semiconductor diodes with Si. It would have been obvious to a person of ordinary skill in the art at the time of the invention to make semiconductor diodes with Si to reduce the production cost.

25. Regarding claim 12, Jie in view of Hanrahan discloses the invention set forth above; Jie in view of Hanrahan does not disclose the filters are arranged over the semiconductor diodes of the sensor chip on a separate glass plate. It is design choice to place the filters over the semiconductor diodes of the sensor chip on a separate glass plate. It would have been obvious to a person of ordinary skill in the art at the time of the invention to place the filters over the semiconductor diodes of the sensor chip on a separate glass plate to secure the location of the filter.

26. Claims 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jie in view of Hanrahan in view of Mathies (U.S. Patent 6,867,420).

27. Regarding claims 13, 15 and 16, Jie in view of Hanrahan discloses the invention set forth above. Jie in view of Hanrahan does not discloses the partial surfaces on the sensor chip which are covered with adapted interference filters and have different sensitivity are shaped as thirds of a circle area and are arranged around a central point. Mathies discloses (Fig. 12) the partial surfaces on the sensor chip, which are covered with adapted interference filters and have different sensitivity, are shaped as thirds of a circle area and are arranged around a central point. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the partial surfaces

on the sensor chip which are covered with adapted interference filters and have different sensitivity are shaped as thirds of a circle area and are arranged around a central point for the detectors to work under the desired light intensity.

28. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jie in view of Hanrahan in view of Auth (U.S. Patent Re. 32,821).

29. Regarding claim 10, Jie in view of Hanrahan discloses the invention set forth above, Jie in view of Hanrahan does not disclose the use of a germanium diode. Auth discloses (Fig. 16) the use of a germanium diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use germanium diode to drop off the unwanted spectrum contents.

30. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jie in view of Hanrahan further in view of Turner (U.S. Patent 6,707,556).

31. Regarding claim 11, Jie in view of Hanrahan discloses the invention set forth above, Jie in view of Hanrahan does not disclose InGaAs diode. Turner discloses the use of InGaAs diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use to reduce dark current.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Ko whose telephone number is 571-272-1926. The examiner can normally be reached on Monday-Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TKO

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